UDECHUKWU CHINONSO IFENNA
COMPUTER ENGINEERING
19/ENG02/067
MAT 102

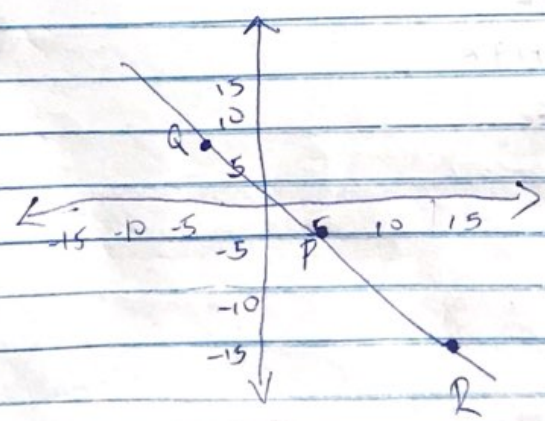
1.) $A(6,-5)$, $B(-2,1)$ $C(0,3)$

$\overrightarrow{AB} = \sqrt{(-2-6)^2 + (1+5)^2}$
$\overrightarrow{AB} = \sqrt{(-8)^2 + (6)^2}$
$\overrightarrow{AB} = \sqrt{64+36}$
$= \sqrt{100}$
$\overrightarrow{AB} = 10$ units

$\overrightarrow{AC} = \sqrt{(0-6)^2 + (3+5)^2}$
$= \sqrt{(-6)^2 + (8)^2}$
$= \sqrt{36+64}$
$= \sqrt{100}$
$\overrightarrow{AC} = 10$ units

$\overrightarrow{BC} = \sqrt{(0+2)^2 + (3-1)^2}$
$= \sqrt{2^2 + 2^2}$
$= \sqrt{4+4}$
$\overrightarrow{BC} = \sqrt{8}$ units
$\overrightarrow{AB} = \overrightarrow{AC}$ ∴ it is an isoscales triangle.

2.)



a) P divides QR internally

$(x_1, y_1) = (-4, 9)$

$(x_2, y_2) = (14, -15)$

$(x, y) = (5, -3)$

$$x = \frac{lx_1 + kx_2}{l+k}$$

$$5 = \frac{-4l + 14k}{l+k}$$

$$5l + 5k = -4l + 14k$$

$$5l + 4l = 14k - 5k$$

$$9l = 9k$$

$$l = k$$

$$1 : 1$$

$$k : l = 1 : 1$$

b) R divides PQ externally

$(x_1, y_1) = (5, -3)$

$(x_2, y_2) = (-4, 9)$

$(x, y) = (14, -15)$

$$x = \frac{lx_1 - kx_2}{l-k}$$

$$14 = \frac{5l + 4k}{l-k}$$

$$14l - 14k = 5l + 4k$$

$$14l - 5l = 4k + 14k$$

$$9l = 18k$$

$$\frac{k}{l} = \frac{2}{1}$$

$$k : l = 2 : 1$$